Southern Nuclear

Michael J. Yox
Regulatory Affairs Director
Vogtle 3 & 4

7825 River Road
Waynesboro, GA 30830
706-848-6459 tel

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Southern Nuclear Operating Company
Vogtle Electric Generating Plant Unit 3
ITAAC Closure Notification on Completion of ITAAC 2.2.03.08b.01 [Index Number 175]

Ladies and Gentlemen:

In accordance with 10 CFR 52.99(c)(1), the purpose of this letter is to notify the Nuclear Regulatory Commission (NRC) of the completion of Vogtle Electric Generating Plant (VEGP) Unit 3 Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) Item 2.2.03.08b.01 [Index Number 175]. This ITAAC verified that the PRHR Heat Exchanger could remove core decay heat during design basis events. This closure notification differs from the Uncompleted ITAAC Notification in that the LOFTRAN model was utilized to address the different initial conditions of the test (i.e., the Hot Leg (HL) and In-containment Refueling Water Storage Tank (IRWST) temperatures and the number of tubes plugged) to validate the PRHR Heat Exchanger performance. The closure process for this ITAAC is based on the guidance described in NEI 08-01, "Industry Guideline for the ITAAC Closure Process under 10 CFR Part 52", which is endorsed by the NRC in Regulatory Guide 1.215.

This letter contains no new NRC regulatory commitments. Southern Nuclear Operating Company (SNC) requests NRC staff confirmation of this determination and publication of the required notice in the Federal Register per 10 CFR 52.99.

If there are any questions, please contact Kelli Roberts at 706-848-6991.

Respectfully submitted,

Michael J. Yox
Regulatory Affairs Director Vogtle 3 & 4

Enclosure: Vogtle Electric Generating Plant (VEGP) Unit 3
Completion of ITAAC 2.2.03.08b.01 [Index Number 175]

MJY/DLW/sfr

To:
Southern Nuclear Operating Company/ Georgia Power Company
Mr. Peter P. Sena III
Mr. D. L. McKinney
Mr. H. Nieh
Mr. M. D. Meier
Mr. G. Chick
Mr. S. Stimac
Mr. P. Martino
Mr. M. J. Yox
Mr. A. S. Parton
Ms. K. A. Roberts
Ms. J.M. Coleman
Mr. C. T. Defnall
Mr. C. E. Morrow
Mr. K. J. Drudy
Mr. J. M. Fisher
Mr. R. L. Beilke
Mr. S. Leighty
Ms. A. C. Chamberlain
Mr. J. C. Haswell
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cc:
Nuclear Regulatory Commission
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Mr. M. King
Mr. G. Bowman
Ms. A. Veil
Mr. C. P. Patel
Mr. G. J. Khouri
Mr. C. J. Even
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Ms. K. McCurry
Mr. J. Parent
Mr. B. Griman

Oglethorpe Power Corporation
Mr. R. B. Brinkman
Mr. E. Rasmussen

Municipal Electric Authority of Georgia
Mr. J. E. Fuller
Mr. S. M. Jackson

Dalton Utilities
Mr. T. Bundros

Westinghouse Electric Company, LLC
Dr. L. Oriani
Mr. D. C. Durham
Mr. M. M. Corletti
Mr. Z. S. Harper
Mr. J. L. Coward

Other
Mr. S. W. Kline, *Bechtel Power Corporation*
Ms. L. Matis, *Tetra Tech NUS, Inc.*
Dr. W. R. Jacobs, Jr., Ph.D., *GDS Associates, Inc.*
Mr. S. Roetger, *Georgia Public Service Commission*
Mr. R. L. Trokey, *Georgia Public Service Commission*
Mr. K. C. Greene, *Troutman Sanders*
Mr. S. Blanton, *Balch Bingham*

Southern Nuclear Operating Company
ND-21-0868
Enclosure

Vogtle Electric Generating Plant (VEGP) Unit 3
Completion of ITAAC 2.2.03.08b.01 [Index Number 175]

ITAAC Statement

Design Commitment

8.b) The PXS provides core decay heat removal during design basis events.

Inspections/Tests/Analyses

1. A heat removal performance test and analysis of the PRHR HX will be performed to determine the heat transfer from the HX. For the test, the reactor coolant hot leg temperature will be initially at ≥ 350°F with the reactor coolant pumps running. The IRWST water level for the test will be above the top of the HX. The test will continue until the hot leg temperature is ≤ 250°F.

Acceptance Criteria

1. A report exists and concludes that the PRHR HX heat transfer rate with the design basis number of PRHR HX tubes plugged is:

≥ 8.46×10^7 Btu/hr with 250°F HL Temp and an initial IRWST temperature of 80°F.

The heat transfer rate measured in the test should be adjusted to account for differences in the HL and IRWST temperatures and the number of tubes plugged.

ITAAC Determination Basis

Multiple ITAAC are performed to confirm the Passive Core Cooling System provides core decay heat removal during design basis events by testing and analysis of the Passive Residual Heat Removal (PRHR) Heat Exchanger (HX) subsystem to determine the heat transfer from the PRHR HX. The Reactor Coolant System (RCS) hot leg temperature will be initially ≥ 350°F with the Reactor Coolant Pumps (RCPs) running. The In-containment Refueling Water Storage Tank (IRWST) water level for the test will be above the top of the PRHR HX, and the test will continue until the hot leg (HL) temperature is ≤ 250°F.

The testing was performed in accordance with Unit 3 Work Order and Preoperational test procedure as documented in Reference 1 during Hot Functional Testing with the RCS at ≥ 350°F, and the IRWST level was verified to be above the PRHR HX. The RCPs were verified to be running and the test was initiated by opening one of the PRHR HX outlet valves. RCS temperature was monitored, and the PRHR HX outlet valve was closed when temperature decreased to ≤ 250°F. PRHR HX inlet temperature, RCS hot leg and cold leg temperatures, IRWST temperature and PRHR HX flow were trended during the test, and this information was provided to engineering to perform the heat transfer rate calculations.

As the actual test conditions differ from the assumptions originally used to develop the ITAAC acceptance criteria of 8.46×10^7 Btu/hr, the heat transfer rate calculated using the UFSAR Chapter 15 LOFTRAN safety analysis code model was adjusted to account for differences in the initial conditions for the test (i.e., the HL and IRWST temperatures and the number of tubes plugged). This adjustment of the acceptance criteria using the LOFTRAN model is necessary to ensure a relevant, conservative comparison of the test results to the heat transfer rates predicted for the test using the LOFTRAN code.

The as-tested performance of the PRHR HX subsystem yielded a heat transfer rate of 8.3916×10^7 Btu/hr. The equivalent calculation using the conservative LOFTRAN model yielded a heat transfer rate of 7.9474×10^7 Btu/hr. As stated in Reference 2, this comparison clearly demonstrates that the actual PRHR HX subsystem performance exceeds that predicted in the LOFTRAN model at the as-tested conditions. As the test performed demonstrates that the PRHR HX subsystem meets its design basis, it can be concluded that the PRHR HX subsystem would also meet the heat transfer capability at the safety analysis conditions associated with the 8.46×10^7 Btu/hr value in the ITAAC acceptance criteria. As such, this ITAAC is determined to be met.

References 1 and 2 are available for NRC inspection as well as the ITAAC 2.2.03.08b.01 Completion Package (Reference 3).

ITAAC Finding Review

In accordance with plant procedures for ITAAC completion, Southern Nuclear Operating Company (SNC) performed a review of all findings pertaining to the subject ITAAC and associated corrective actions. This review found there are no relevant ITAAC findings associated with this ITAAC. The ITAAC completion review is documented in the ITAAC Completion Package for ITAAC 2.2.03.08b.01 (Reference 3) and is available for NRC review.

ITAAC Completion Statement

Based on the above information, SNC hereby notifies the NRC that ITAAC 2.2.03.08b.01 was performed for VEGP Unit 3 and that the prescribed acceptance criteria were met.

Systems, structures, and components verified as part of this ITAAC are being maintained in their as-designed, ITAAC compliant condition in accordance with approved plant programs and procedures.

References (available for NRC inspection)

1. SV3-PXS-ITR-800175, Rev. 0, "Unit 3 Recorded Results of PRHR Heat Exchanger Heat Transfer Rate Test: ITAAC 2.2.03.08b.01"
2. SV3-PXS-T2C-011, Rev. 0, "Vogtle Unit 3 PXS Hot Functional Test Results Validation for PRHR Performance"
3. 2.2.03.08b.01-U3-CP-Rev0, ITAAC Completion Package